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PCT/KR2003/002918

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# PCT

REC'D 31 MAY 2005

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

| Applicant's or agent's file reference P03EA029/PCT. | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
|---|---|---|
| International application No. **PCT/KR2003/002918** | International filing date *(day/month/year)* **30 DECEMBER 2003 (30.12.2003)** | Priority date *(day/month/year)* 06 JANUARY 2003 (06.01.2003) |

International Patent Classification (IPC) or national classification and IPC

**IPC7 H04N 7/015**

Applicant

**ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE et al**

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| Date of submission of the demamd | Date of completion of this report |
|---|---|
| **11 JUNE 2004 (11.06.2004)** | 21 MAY 2005 (21.05.2005) |


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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2003/002918

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:
pages _____
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☐ the claims:
pages _____
pages _____ , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☐ the drawings:
pages _____
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:
pages _____
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☒ the language of publication of the international application(under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained inthe international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

**INTERNATIONAL PRELIMINARY EXAMINATION**

International aplication No.
PCT/KR2003/002918

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | 5-45 | YES |
| | Claims | 1-4 | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-45 | NO |
| Industrial applicability (IA) | Claims | 1-45 | YES |
| | Claims | | NO |

2. Citations and explanations (Rule 70.7)

D1 : WO 02/100026 A1

The present invention relates to digital television transmitter and receiver for transmitting and receiving dual stream using 4 level vestigial side band robust data. D1 shows the simultaneous transmission of 8-VSB and robust 2-VSB (4-VSB) symbols in ATSC system.

(1) Claims 1-8

According to the description, the elements illustrated in Fig. 4, the randomizer, RS encoder, interleaver, trellis encoder, second mux, and pilot adder/modulator/RF converter, are the same as the conventional ones of Fig.1 as the prior art. So, the transmitting system of the claim 1 is characteristic of encoding robust data in a stream such that the robust data are mapped to one of two groups {-5, -3, 1, 7} and {-7, -1, 3, 5} each having four levels, to thereby generate an encoded signal.

In D1, the information for robust stream is placed in the robust byte at a desirable bit position for symbol mapping, and then the symbols are capable of being mapped according to a 2-VSB mode or a 4-VSB mode. In the 4-VSB mode, the robust data mapping results in symbols from the alphabet {-7, -3, 3, 7} which is essentially a trellis coded 4-VSB symbol.

The mapping technology in the claim1 can be used to map the robust data to one of two groups {-7, -5, 5, 7} and {-7, -3, 3, 7} , as mentioned in the description of this invention. Therefore, the claim 1 is neither novel nor inventive.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

The claims 2-3 add including normal data in the video stream and mapping the data into {-7, -5, -3, -1, 1, 3, 5, 7} to the claim 1. In D1, standard 8-VSB bit stream are merged in video signal, and then transmitted. Therefore, the claims 2-3 are neither novel nor inventive.

The claim 4 defines that a robust encoder encodes two bits of information data (X1', X2') of the video stream to generate two bits of data symbol represented by (X1, X2), and the trellis encoder encodes the two bits of data symbol represented by (X1, X2) to generate three bits of data symbols each having one of three levels represented by (Z2, Z1,Z0). In D1, considering the description and Fig.5, the information bits of X1 and X2 are calculated in pre-coder, and the above process, through the trellis encoder, results in Z2, Z1 and Z0 indicating the VSB modes. Therefore, the claim 4 is neither novel nor inventive.

The claims 5-7 relate to the encoding method of the robust encoder and the locating method of the robust data in the video stream. In D1, it is described that the trellis encoded symbols are mapped, in symbol mapper, into 2-, 4-, and 8-level, and the parameters, NRP and RPP, are used for the robust data related information. Therefore, the claims 5-7 are not inventive.

The claim 8 defines that the encoding means of the claim 1 includes the determining unit for selecting one of two groups {-5, -3, 1, 7} and {-7, -1, 3, 5} . The addition of the determining ability would be obvious to the skilled person by using the mapping technology. Therefore, the claim 8 is not inventive.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

(2) Claims 9-11

The claims 9-11 are characteristic of, except the features speculated in the above (1), having two encoding means for encoding robust data, that is, first means for mapping the data one of two groups {-5, -3, 1, 7} and {-7, -1, 3, 5} and second means for mapping the data another group. There is no difference between the two encoding means but the mapping group. So, the addition of another encoding means would be obvious to the skilled person, and the claims 9-11 are not inventive.

(3) Claims 12-24

The claims 12-24 are characteristic of, except the features speculated in the above (1) and (2), an equalizer for deciding a level of the robust data based on the group which is used for encoding the robust data. Considering the description and Fig.10 in D1, the control information at packet level based on MODE, NRP, RPP parameters are generated, and the equalizer uses the signal(526) including the information to get a better estimate of the symbol. So, the above function of this invention would be ovious to the skilled person, and the claims 12-24 are not inventive.

(4) Claims 25-45

According to the speculation of the above (1), (2), and (3), the claims 25-45 are not inventive.